IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

1. (currently amended) A polarization mode dispersion compensator, comprising:

an optical unit receiving an input optical signal and outputting an output optical signal;

a distortion analyzer ~~which includes~~ having a polarimeter~~, analyzing the output optical signal~~ and producing a feedback signal~~, which represents degree of polarization of the output optical signal, by using a polarization property of the polarimeter, the polarization property determined through calibration using a plurality of intensity signals output from the polarimeter~~; and

a controller producing a control signal to adjust said optical unit, based on the feedback signal; and

wherein said polarimeter having a plurality of optical components to measure intensity signals, the plurality of optical components are configured in such a way that a Poincaré sphere is fully covered by the intensity signals; and

said distortion analyzer produces the feedback signal by calculating the intensity signals.

2. (currently amended) A polarization mode dispersion compensator according to claim 1, wherein:

~~said polarimeter includes a plurality of optical components to produce the intensity signals;~~

said distortion analyzer produces the feedback signal by using ~~information of~~ an instrument matrix of ~~the~~ said polarimeter ~~as the polarization property~~; and

the ~~information of the~~ instrument matrix is obtained by ~~inputting light with different states of polarization into the polarimeter such that a Poincaré sphere is fully covered and measuring the intensity signals output from the polarimeter~~the configuration of said plurality of optical components.

3. (currently amended) A polarization mode dispersion compensator according to claim 2, wherein

the ~~information of the~~ instrument matrix is obtained by plotting two of the intensity signals on a plane for the different states of polarization and determining an azimut and an ellipticity of an ellipse which surrounds plotted points.

4. (original) A polarization mode dispersion compensator according to claim 3, wherein

maximum and minimum intensity of the plotted points are further determined for each of the two of the intensity signals and used, together with the azimut and ellipticity, as the information of the instrument matrix.

5. (currently amended) A polarization mode dispersion compensator according to claim 1, wherein:

said ~~polarimeter includes a~~ plurality of optical components ~~forming~~ are four analyzers to produce four intensity signals; and

~~the optical components~~ said four analyzers are arranged such that equivalent analyzer polarizations of three ~~of the four~~ analyzers are ~~angular~~ angularly spaced by 120 degrees on a Poincaré sphere and an equivalent analyzer polarization of another ~~of the four analyzers~~ analyzer is orthogonal to the equivalent analyzer polarizations of the three analyzers on the Poincaré sphere.

6. (currently amended) A polarization mode dispersion compensator according to claim 1, wherein:

~~said polarimeter includes a~~ said plurality of optical components ~~forming~~ are four analyzers to produce four intensity signals; and

~~the optical components~~ said four analyzers are arranged such that equivalent analyzer polarizations of the four analyzers form a structure like atoms in a diamond on a Poincaré sphere.

7. (canceled)

8. (original) A polarization mode dispersion compensator according to claim 1, wherein

said controller receives a feedback signal which represents a bit-error rate of the output optical signal and produces the control signal based on both the feedback signal representing the degree of polarization and the feedback signal representing the bit-error rate.

9. (original) A polarization mode dispersion compensator according to claim 1, wherein:

said distortion analyzer produces a feedback signal which represents a state of polarization of the output optical signal; and

said controller receives a feedback signal which represents a bit-error rate of the output optical signal and produces the control signal based on the feedback signal representing the degree of polarization, the feedback signal representing the state of polarization and the feedback signal representing the bit-error rate.

10. (currently amended) A distortion analyzer, comprising:

a polarimeter which includes a plurality of optical components to produce a plurality of intensity signals from an input optical signal; and

a processor producing a feedback signal, which represents degree of polarization of the input optical signal, for polarization mode dispersion compensation from the intensity signals ~~by using a polarization property of the polarimeter, the polarization property determined through calibration using intensity signals output from the polarimeter~~; and

wherein said polarimeter having a plurality of optical components to measure intensity signals, the plurality of optical components are configured in such a way that a Poincaré sphere is fully covered by the intensity signals; and

and said distortion analyzer produces the feedback signal by calculating the intensity signals.

11. (withdrawn) A polarimeter comprising:

three beam splitters;

two polarizers within a given tolerance range of zero degrees;

a polarizer within a given tolerance range of 60 degrees;

a polarizer within a given tolerance range of -60 degrees; and

a retarder within a given tolerance range of a quarter of a wavelength,

wherein the beam splitters, the polarizers and the retarder form four analyzers to produce four intensity signals, and are arranged such that equivalent analyzer polarizations of three of the four analyzers are angular spaced by 120 degrees on a Poincaré sphere and an equivalent analyzer polarization of another of the four analyzers is orthogonal to the equivalent analyzer polarizations of the three analyzers on the Poincaré sphere.

12. (withdrawn) A polarimeter comprising:

three beam splitters;

two polarizers within a given tolerance range of zero degrees;

a polarizer within a given tolerance range of 60 degrees;

a polarizer within a given tolerance range of -60 degrees;

a retarder within a given tolerance range of a quarter of a wavelength; and

three retarders within a given tolerance range of 1/18.48 of a wavelength,

wherein the beam splitters, the polarizers and the retarders form four analyzers to produce four intensity signals, and are arranged such that equivalent analyzer polarizations of the four analyzers form a structure like atoms in a diamond on a Poincaré sphere.

13. (withdrawn) A polarimeter comprising:

three beam splitters;

two polarizers within a given tolerance range of zero degrees;

a polarizer within a given tolerance range of 60 degrees;

a polarizer within a given tolerance range of -60 degrees;

a retarder within a given tolerance range of 1/18.48 subtracted from a quarter of a wavelength; and

a retarder within a given tolerance range of 1/18.48 of a wavelength,

wherein the beam splitters, the polarizers and the retarders form four analyzers to produce four intensity signals, and are arranged such that equivalent analyzer polarizations of the four analyzers form a structure like atoms in a diamond on a Poincaré sphere.

14. (currently amended) A method of polarization mode dispersion compensation, comprising:

determining a polarization property of a polarimeter through calibration using a plurality of intensity signals output from a polarimeter;

producing an output optical signal through an optical unit from an input optical signal;

~~analyzing the output optical signal~~ and producing a feedback signal, ~~which represents degree of polarization of the output optical signal, by using the polarization property of the polarimeter~~; and

adjusting said optical unit according to the feedback signal;

wherein said polarimeter having a plurality of optical components to measure intensity signals, the plurality of optical components are configured in such a way that a Poincaré sphere is fully covered by the intensity signals; and

and said distortion analyzer produces the feedback signal by calculating the intensity signals.

15. (currently amended) A polarization mode dispersion compensator, comprising:

optical means for receiving an input optical signal and outputting an output optical signal;

distortion analyzer ~~means which includes~~having a polarimeter ~~means, for analyzing the output optical signal and producing a feedback signal, which represents degree of polarization of the output optical signal, by using a polarization property of the polarimeter means, the polarization property determined through calibration using a plurality of intensity signals output from the polarimeter means~~; and

a controller ~~means~~ for producing a control signal to adjust said optical ~~means~~unit, based on the feedback signal;

wherein said polarimeter having a plurality of optical components to measure intensity signals, the plurality of optical components are configured in such a way that a Poincaré sphere is fully covered by the intensity signals; and

and said distortion analyzer produces the feedback signal by calculating the intensity signals.

16. (currently amended) A distortion analyzer, comprising:

polarimeter means which includes a plurality of optical means to produce a plurality of intensity signals from an input optical signal; and

processor means for producing a feedback signal, which represents degree of polarization of the input optical signal, for polarization mode dispersion compensation from the intensity signals ~~by using a polarization property of the polarimeter means, the polarization property determined through calibration using intensity signals output from the polarimeter means~~;

wherein said polarimeter having a plurality of optical components to measure intensity signals, the plurality of optical components are configured in such a way that a Poincaré sphere is fully covered by the intensity signals; and

and said distortion analyzer produces the feedback signal by calculating the intensity signals.

17. (new) A polarization mode dispersion compensator, comprising:

an optical unit receiving an input optical signal and outputting an output optical signal;

a distortion analyzer which includes a polarimeter, analyzing the output optical signal and producing a feedback signal, which represents degree of polarization of the output optical signal, by using a polarization property of the polarimeter, the polarization property determined through calibration using a plurality of intensity signals output from the polarimeter; and

a controller producing a control signal to adjust said optical unit, based on the feedback signal, and

wherein said polarimeter includes a plurality of optical components forming four analyzers to produce four intensity signals; and the optical components are arranged such that equivalent analyzer polarizations of the four analyzers form a structure like atoms in a diamond on a Poincaré sphere.